

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : KIM et al.
Serial No. : 10/582,743 (U.S. Patent Application Publication 2007-093656 A1)
Filing Date : 13 June 2006
For : METHOD FOR PREPARATION OF FINE POWDERED
CELLULOSE ETHERS
Examiner : BLAND, Layla D.
Art Unit : 1623

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New York, NY 10151

DECLARATION UNDER 37 C.F.R. § 1.132

Mail Stop: Amendment
Commissioner for Patents
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I, Dr. LEE, Sang-koo of 211-1202 Expo Apt, Junmin-dong, Yusung-gu, Daejeon 205-755,
Republic of Korea, a citizen of KOREA, hereby declare:

- that I am an organic chemist having studied at Seoul National University
- that I have a doctorate degree which was awarded to me by Korea Advanced Institute of Science and Technology in 1994;
- that I have been employed as a researcher for the Samsung Fine Chemicals, Co., Ltd since end of 1993 and worked in cellulose ether manufacturing field as researcher and production engineer over 15 years;
- that I am named as an inventor in 13 Korean patents and 1 U.S. patent relating to cellulose ether.

I am a named inventor of U.S. Ser. No. 10/582,743 ("the '743 application") filed on 13 June 2006.

I am familiar with the invention described in the '743 application and the content of the Office Action mailed on 21 September 2009. It was reported to that one means of overcoming

the rejections of record was to show additional test data to further support the assertion of unexpected results.

I have conducted an additional experiment with the same conditions of time and temperature as Example 1 except that the amount of diluent gas, 3.0 kg, now represents 0.5 parts by weight of diluent gas per 1 part by weight of cellulose. The data for Ex. 1 below is from the specification of the '743 application (0.25 parts by weight of diluent gas per 1 part by weight of cellulose).

	DME (kg)	Primary reaction		Secondary reaction		Tertiary reaction		Particle size distribution (under 100 mesh %)
		Temp (° C)	Time (min)	Temp (° C)	Time (min)	Temp (° C)	Time (min)	
Ex. 1	1.5	40	60	60	100	80	180	99.5
Comp. Ex. 2	3.0	40	60	60	100	80	180	54.7

DME – dimethyl ether(diluent gas)

As can be seen from this direct comparison, when increasing the amount of diluent gas outside the claimed range (Comp. Ex. 2) when all other conditions are the same, the particle size distribution under 100 mesh % is far worse than when using less diluent gas. This was totally surprising as the state of the art was such that increasing the use of diluent gas was thought to lower particle size (and increase % of the particle size distribution under 100 mesh).

With regard to the allegation that it would have been obvious to simply “mill/grind” the starting material instead of at the end of the process of making cellulose ether, this is not the correct recitation of the state of the art. It is well known to those of skill in the art that flocculation/agglomeration (also known as clumping) is a problem when working with small particle forms. As such, creation of small particles is usually deferred until the end of the process as it is unlikely to be able to start with small particle cellulose and maintain the size during the etherification process.

With regard to the conflicting figures of 2 kg of dimethylether mentioned in the description of Example 1 and 1.5 kg of dimethylether mentioned for Example 1 in Table 1, I

hereby attest that the correct figure is 1.5 kg of dimethylether. This error, which is simple transcription error, occurred without any deceptive intent during the preparation of the specification.

The undersigned hereby declares as follows:

The undersigned further declares that all statements made herein of his or her own knowledge are true and that all statements made on information and belief are believed to be true; and that the foregoing statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: December 8, 2009

By: Lee Sang-koo
Dr. LEE, Sang-koo